

WHAT IS CLAIMED IS:

1. A cellular system comprising a plurality of base stations and a plurality of mobile stations existing in cells controlled by each of said base stations,

5       said base station comprising means for sending a first signal including information to said mobile station using a shared channel; and

10      means for setting a dedicated channel between itself and said mobile station to send a downlink signal including downlink control information and receive an uplink signal including uplink control information,

      said mobile station comprising means for receiving said first signal; and

15      means for setting a dedicated channel between itself and a connection base station with one or more of said base stations to receive said downlink signal and send said uplink signal,

      wherein said system comprises reliability increasing means for increasing reliability of control information included in at least one of said downlink signal and said uplink signal  
20      sent/received by a predetermined mobile station in the case where said connection base station sends said first signal to said predetermined mobile station, compared to the case where said sending is not carried out.

2. The cellular system according to claim 1, comprising means  
25     for controlling transmission of said first signal using said

uplink control information and said downlink control information.

3. The cellular system according to claim 1, wherein said base station comprises means for sending a common pilot signal,

5       said predetermined mobile station comprises means for receiving said common pilot signal sent from each of said connection base stations, and communicating transmission control information based on power for reception thereof to said connection base stations, and

10       each of said connection base stations comprises means for determining based on said communication whether or not said first signal is sent.

4. The cellular system according to claim 1, wherein each of said connection base stations comprises means for determining

15       the reception SIR of said uplink signal sent from said predetermined mobile station, and controlling transmission power of said uplink signal sent from said predetermined mobile station, based on said reception SIR and a predetermined desired value, and

20       said reliability increasing means increases said reliability by changing said desired value.

5. The cellular system according to claim 1, wherein said predetermined mobile station comprises means for synthesizing said downlink signals sent from said plurality of connection

25       base stations to determine the reception SIR, and controlling

transmission power of said downlink signal sent from each of said connection base stations, based on said reception SIR and a predetermined SIR, and

5       said reliability increasing means increases said reliability by changing said desired value.

6.      The cellular system according to claim 4, comprising a base station controller connected to each of said connection base stations,

10     wherein said base station controller comprises means for communicating said desired value or a changed amount of said desired value to each of said connection stations or said predetermined mobile station, and

15     said reliability increasing means changes said desired value in accordance with said communication.

15     7.      The cellular system according to claim 6, wherein said base station comprises means for sending a common pilot signal,

15     said predetermined mobile station comprises means for receiving said common pilot signal sent from each of said connection base stations, and communicating information about power for reception thereof to said base station controller, and

15     said base station controller determines said desired value or the changed amount of said desired value based on said communication.

8. The cellular system according to claim 4, wherein said base station comprises means for sending a common pilot signal, said predetermined mobile station comprises means for determining power for reception of said common pilot signal sent 5 from each of said connection base stations, and said reliability increasing means changes said desired value based on the result of said determination.

9. The cellular system according to claim 1, wherein each of said connection base stations comprises means for communicating 10 to said predetermined mobile station transmission power control information based on the reception SIR of said uplink signal sent from said predetermined mobile station, said predetermined mobile station comprises first power controlling means for controlling transmission power in 15 accordance with transmission power control information for decreasing transmission power of said uplink signal if different transmission power control information is informed by a plurality of said connection base stations to said first power controlling means; and 20 second power controlling means for controlling transmission power in accordance with transmission power control information for increasing transmission power of said uplink signal if different transmission power control information is informed by a plurality of said connection base stations to said first power controlling means, and 25

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said reliability increasing means increases said reliability by switching from said first power controlling means to said second power controlling means.

10. The cellular system according to claim 1, wherein each of  
5 said base stations comprises means for sending a common pilot  
signal,

10 said predetermined mobile station comprises means for receiving said common pilot signal sent from each of said connection base stations, and communicating transmission control information based on the power for reception thereof to said connection base stations,

each of said connection base stations comprises first transmission controlling means for determining in accordance with said communication whether or not said downlink signal is sent; and

second transmission controlling means for sending said downlink signal irrespective of said communication, and

20 said reliability increasing means increases said reliability by switching from said first transmission controlling means to said second transmission controlling means.

11. A communication control method in a cellular system comprising a plurality of base stations and a plurality of mobile stations existing in cells controlled by each of said base stations,

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said base station comprising a step of sending a first signal including information to said mobile station using a shared channel; and

5       a step of setting a dedicated channel between itself and said mobile station to send a downlink signal including downlink control information and receive an uplink signal including uplink control information,

10      said mobile station comprising a step of receiving said first signal; and

15      a step of setting a dedicated channel between itself and a connection base station with one or more of said base stations to receive said downlink signal and send said uplink signal,

20      wherein said method comprises a reliability increasing step of increasing reliability of control information included in at least one of said downlink signal and said uplink signal sent/received by a predetermined mobile station in the case where said connection base station sends said first signal to said predetermined mobile station, compared to the case where said sending is not carried out.

25      12. The communication control method according to claim 11, comprising a step of controlling transmission of said first signal using said uplink control information and said downlink control information.

30      13. The communication control method according to claim 11, wherein said base station comprises a step of sending a common pilot signal,

said predetermined mobile station comprises a step of receiving said common pilot signal sent from each of said connection base stations, and communicating transmission control information based on power for reception thereof to said  
5 connection base stations, and

each of said connection base stations comprises a step of determining based on said communication whether or not said first signal is sent.

14. The communication control method according to claim 11,  
10 wherein each of said connection base stations comprises a step of determining the reception SIR of said uplink signal sent from said predetermined mobile station, and controlling transmission power of said uplink signal sent from said predetermined mobile station, based on said reception SIR and a predetermined desired  
15 value, and

in said reliability increasing step, said reliability is increased by changing said desired value.

15. The communication control method according to claim 11,  
wherein said predetermined mobile station comprises a step of  
20 synthesizing said downlink signals sent from said plurality of connection base stations to determine the reception SIR, and controlling transmission power of said downlink signal sent from each of said connection base stations, based on said reception SIR and a predetermined SIR, and

25 in said reliability increasing step, said reliability is increased by changing said desired value.

16. The communication control method according to claim 14,  
comprising a base station controller connected to each of said  
connection base stations,

wherein said base station controller comprises a step of  
5 communicating said desired value or a changed amount of said  
desired value to each of said connection stations or said  
predetermined mobile station, and

in said reliability increasing step, said desired value  
is changed in accordance with said communication.

10 17. The communication control method according to claim 16,  
wherein said base station comprises a step of sending a common  
pilot signal,

said predetermined mobile station comprises a step of  
receiving said common pilot signal sent from each of said  
15 connection base stations, and communicating information about  
power for reception thereof to said base station controller,  
and

said base station controller determines said desired value  
or the changed amount of said desired value based on said  
20 communication.

18. The communication control method according to claim 14,  
wherein said base station comprises a step of sending a common  
pilot signal,

said predetermined mobile station comprises a step of determining power for reception of said common pilot signal sent from each of said connection base stations, and

in said reliability increasing step, said desired value

5 is changed based on the result of said determination.

19. The communication control method according to claim 11, wherein each of said connection base stations comprises a step of communicating to said predetermined mobile station M transmission power control information based on the reception  
10 SIR of said uplink signal sent from said predetermined mobile station,

said predetermined mobile station comprises a first power controlling step of controlling transmission power in accordance with transmission power control information for decreasing  
15 transmission power of said uplink signal if different transmission power control information is informed by a plurality of said connection base stations to said first power controlling means; and

a second power controlling step of controlling transmission power in accordance with transmission power control information for increasing transmission power of said uplink signal if different transmission power control information is informed by a plurality of said connection base stations to said first power controlling means, and  
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25 in said reliability increasing step, said reliability is increased by switching from said first power controlling step to said second power controlling step.

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20. The communication control method according to claim 11,  
wherein each of said base stations comprises a step of sending  
a common pilot signal,

5       said predetermined mobile station comprises a step of  
receiving said common pilot signal sent from each of said  
connection base stations, and communicating transmission control  
information based on the power for reception thereof to said  
connection base stations,

10      each of said connection base stations comprises a first  
transmission controlling step of determining in accordance with  
said communication whether or not said downlink signal is sent;  
and

15      a second transmission controlling step of sending said  
downlink signal irrespective of said communication, and  
said reliability increasing means increases said  
reliability by switching from said first transmission  
controlling step to said second transmission controlling step.

21. A base station of a cellular system comprising a plurality  
of base stations and a plurality of mobile stations existing  
20     in cells controlled by each of said base stations,

      said base station comprising means for sending a first signal  
including information to said mobile station using a shared  
channel; and

25      means for setting a dedicated channel between itself and  
said mobile station to send a downlink signal including downlink

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control information and receive an uplink signal including uplink control information,

said mobile station comprising means for receiving said first signal; and

5       means for setting a dedicated channel between itself and a connection base station with one or more of said base stations to receive said downlink signal and send said uplink signal.

wherein said base station comprises reliability increasing means for increasing reliability of control information included  
10      in at least one of said downlink signal and said uplink signal sent/received by a predetermined mobile station in the case where said connection base station sends said first signal to said predetermined mobile station, compared to the case where said sending is not carried out.

15     22. The base station according to claim 21, comprising means for controlling transmission of said first signal using said uplink control information and said downlink control information.

23. The base station according to claim 21, wherein said base  
20      station comprises means for sending a common pilot signal,  
            said predetermined mobile station comprises means for receiving said common pilot signal sent from each of said connection base stations, and communicating transmission control information based on power for reception thereof to said  
25      connection base stations, and

each of said connection base stations comprises means for determining based on said communication whether or not said first signal is sent.

24. The base station according to claim 21, wherein each of  
5 said connection base stations comprises means for determining the reception SIR of said uplink signal sent from said predetermined mobile station, and controlling transmission power of said uplink signal sent from said predetermined mobile station, based on said reception SIR and a predetermined desired value,  
10 and

said reliability increasing means increases said reliability by changing said desired value.

25. The base station according to claim 24, wherein said base station comprises means for sending a common pilot signal,  
15 said predetermined mobile station comprises means for determining power for reception of said common pilot signal sent from each of said connection base stations, and  
          said reliability increasing means changes said desired value based on the result of said determination.

20 26. The base station according to claim 21, wherein each of said base stations comprises means for sending a common pilot signal,

          said predetermined mobile station comprises means for receiving said common pilot signal sent from each of said  
25 connection base stations, and communicating transmission control

information based on the power for reception thereof to said connection base stations,

each of said connection base stations comprises first transmission controlling means for determining in accordance with said communication whether or not said downlink signal is sent; and

second transmission controlling means for sending said downlink signal irrespective of said communication, and

said reliability increasing means increases said reliability by switching from said first transmission controlling means to said second transmission controlling means.

27. A mobile station of a cellular system comprising a plurality of base stations and a plurality of mobile stations existing in cells controlled by each of said base stations,

15       said base station comprising means for sending a first signal including information to said mobile station using a shared channel; and

means for setting a dedicated channel between itself and said mobile station to send a downlink signal including downlink control information and receive an uplink signal including uplink control information,

20       said mobile station comprising means for receiving said first signal; and

means for setting a dedicated channel between itself and a connection base station with one or more of said base stations to receive said downlink signal and send said uplink signal,

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wherein said mobile station comprises reliability increasing means for increasing reliability of control information included in at least one of said downlink signal and said uplink signal sent/received by a predetermined mobile  
5 station in the case where said connection base station sends said first signal to said predetermined mobile station, compared to the case where said sending is not carried out.

28. The mobile station according to claim 27, comprising means for controlling transmission of said first signal using said  
10 uplink control information and said downlink control information.

29. The mobile station according to claim 27, wherein said base station comprises means for sending a common pilot signal,  
said predetermined mobile station comprises means for  
15 receiving said common pilot signal sent from each of said connection base stations, and communicating transmission control information based on power for reception thereof to said connection base stations, and  
each of said connection base stations comprises means for  
20 determining based on said communication whether or not said first signal is sent.

30. The mobile station according to claim 27, wherein said predetermined mobile station comprises means for synthesizing said downlink signals sent from each of said connection base  
25 stations to determine the reception SIR, and controlling

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transmission power of said downlink signal sent from each of said connection base stations, based on said reception SIR and a predetermined SIR, and

said reliability increasing means increases said

5 reliability by changing said desired value.

31. The mobile station according to claim 30, wherein said base station comprises means for sending a common pilot signal,

said predetermined mobile station comprises means for determining power for reception of said common pilot signal sent

10 from each of said connection base stations, and

said reliability increasing means changes said desired value based on the result of said determination.

32. The mobile station according to claim 27, wherein each of said connection base stations comprises means for communicating

to said predetermined mobile station transmission power control information based on the reception SIR of said uplink signal sent from said predetermined mobile station,

said predetermined mobile station comprises first power controlling means for controlling transmission power in

20 accordance with transmission power control information for  
decreasing transmission power of said uplink signal if different  
transmission power control information is informed by a plurality  
of said connection base stations to said first power controlling  
means; and

25 second power controlling means for controlling transmission power in accordance with transmission power control information

for increasing transmission power of said uplink signal if different transmission power control information is informed by a plurality of said connection base stations to said first power controlling means, and

- 5       said reliability increasing means increases said reliability by switching from said first power controlling means to said second power controlling means.

33. The cellular system according to claim 4, wherein the mobile station sends a dedicated pilot signal as uplink control information, and the base station adaptively forms an antenna directional pattern to send said first signal, using said dedicated pilot signal.

34. The communication control method according to claim 14, wherein the mobile station sends a dedicated pilot signal as uplink control information, and the base station adaptively forms an antenna directional pattern to send said first signal, using said dedicated pilot signal.

35. The base station according to claim 24, wherein an antenna directional pattern is adaptively formed to send said first signal, using the dedicated pilot signal sent as uplink information from the mobile station.

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